

Section 9 — Field Harmonics & ϕ^7 Coherence Threshold

Section 9 formalizes the mathematics of field harmonics in the FUNt framework, highlighting the ϕ^7 coherence threshold as the universal transition between sub-coherent and photon-like field behavior. This governs decay timing, tunneling windows, harmonic locking, and cross-particle resonance.

9.1 Harmonic Field Structure

- Fields express as ϕ - ψ harmonic standing waves.
- Nodes align at ϕ^n intervals, creating discrete energy tiers.
- Field intensity modulates by ϕ^n scaling across spatial shells.
- [Insert diagram here]

9.2 ϕ^7 Coherence Definition

- $\phi^7 \approx 29.034$ marks the minimum harmonic intensity for photon-like behavior.
- Transition to ϕ^7 corresponds to coherence collapse or emission onset.
- Unified across electron, proton, and neutron systems.
- [Insert diagram here]

9.3 Tunneling & ϕ^7

- Tunneling probability increases when ϕ^7 resonance is reached.
- Defines the coherence jump between bound and quasi-free states.
- Maps to low-barrier fast-tunneling experiments.
- [Insert diagram here]

9.4 Photon Emission

- Photon emission occurs when ϕ^7 is exceeded in a bound charge.
- Hydrogen Lyman- α peak reflects ϕ^7 transition width.
- Explains discrete spectral lines without continuous drifting.
- [Insert diagram here]

9.5 Decay Timing Law

- Decay windows align with ϕ^7 harmonic matching.
- Protons reach ϕ^7 during decay-coupler transitions.

- Neutron β -decay timing reflects φ^7 alignment threshold.
- [Insert diagram here]

9.6 Coherence Collapse

- φ^7 defines the minimum harmonic energy for full collapse.
- Below $\varphi^7 \rightarrow$ sub-coherent quasi-static behavior.
- At/above $\varphi^7 \rightarrow$ full emission, transition, or inversion.
- [Insert diagram here]

9.7 Scalar-Field Transition

- Transition to φ^9 allows full scalar field transport.
- $\varphi^7 \rightarrow$ entry point, $\varphi^9 \rightarrow$ exit point from coherent domain.
- Describes unified particle inversion sequence.
- [Insert diagram here]